Angles as Fractions of a Circle

Name: _____	Date: _____	Score: _____ / 24

Quick Review

An **angle** is the amount of turn between two rays that share a corner. We measure angles in **degrees**, written with a little circle like $90°$. Picture the angle sitting at the center of a circle. A full circle all the way around is $360°$. So an angle that turns through $\frac{1}{360}$ of a circle measures exactly $1°$. To find the degrees in a fraction of a circle, multiply that fraction by 360. For example, a $\frac{1}{4}$ turn is $\frac{1}{4} \times 360 = 90°$, which is a square corner.

◇ **Example:** An angle turns through $\frac{1}{6}$ of a full circle. How many degrees does it measure?
⇒ A full circle is $360°$, and this angle is $\frac{1}{6}$ of that. To take $\frac{1}{6}$ of something, divide it into 6 equal parts: $360 \div 6 = 60$. So the angle measures $60°$. You can check it: 6 angles of $60°$ each make $6 \times 60 = 360°$, one whole circle.

Answer: $60°$

PRACTICE

Find the degree measure of each angle described as a fraction of a full circle.

1. Degrees in $\frac{1}{2}$ of a circle _____
2. Degrees in $\frac{1}{4}$ of a circle _____
3. Degrees in $\frac{1}{3}$ of a circle _____
4. Degrees in $\frac{1}{6}$ of a circle _____
5. Degrees in $\frac{1}{5}$ of a circle _____
6. Degrees in $\frac{1}{8}$ of a circle _____
7. Degrees in $\frac{1}{9}$ of a circle _____
8. Degrees in $\frac{1}{10}$ of a circle _____
9. Degrees in $\frac{1}{12}$ of a circle _____
10. Degrees in $\frac{3}{4}$ of a circle _____
11. Degrees in $\frac{2}{3}$ of a circle _____
12. Degrees in $\frac{2}{6}$ of a circle _____
13. Degrees in $\frac{3}{6}$ of a circle _____
14. Degrees in $\frac{2}{5}$ of a circle _____
15. Degrees in $\frac{3}{8}$ of a circle _____
16. Degrees in $\frac{5}{6}$ of a circle _____
17. Degrees in $\frac{4}{9}$ of a circle _____
18. Degrees in $\frac{5}{12}$ of a circle _____
19. Degrees in $\frac{7}{10}$ of a circle _____
20. Degrees in $\frac{7}{12}$ of a circle _____

♦ Word Problems

21. Maria spins the pointer on a board game. It makes a $\frac{1}{4}$ turn before it stops. How many degrees did the pointer turn? _____

22. A pizza is cut into 8 equal slices. The angle at the pointy tip of one slice is what fraction of a circle, and how many degrees is it? _____

23. The minute hand of a clock moves from the 12 all the way around to the 4. That is $\frac{4}{12}$ of a full turn. How many degrees did the minute hand sweep through? _____

24. A skateboarder does a trick that turns him $\frac{1}{2}$ of the way around. His friend turns $\frac{3}{4}$ of the way around. How many more degrees did the friend turn? _____

Answer Keys

1. $180°$
2. $90°$
3. $120°$
4. $60°$
5. $72°$
6. $45°$
7. $40°$
8. $36°$
9. $30°$
10. $270°$
11. $240°$
12. $120°$
13. $180°$
14. $144°$
15. $135°$
16. $300°$
17. $160°$
18. $150°$
19. $252°$
20. $210°$
21. $90°$
22. $\frac{1}{8}$ of a circle, $45°$
23. $120°$
24. $90°$ more

Step-by-Step Explanations

1. Half of a $360°$ circle is $360 \div 2 = 180°$.
2. One quarter of $360°$ is $360 \div 4 = 90°$, a square corner.
3. One third of $360°$ is $360 \div 3 = 120°$.
4. One sixth of $360°$ is $360 \div 6 = 60°$.
5. One fifth of $360°$ is $360 \div 5 = 72°$.
6. One eighth of $360°$ is $360 \div 8 = 45°$.
7. One ninth of $360°$ is $360 \div 9 = 40°$.
8. One tenth of $360°$ is $360 \div 10 = 36°$.
9. One twelfth of $360°$ is $360 \div 12 = 30°$.
10. One quarter is $90°$, so three quarters is $3 \times 90 = 270°$.
11. One third is $120°$, so two thirds is $2 \times 120 = 240°$.
12. One sixth is $60°$, so two sixths is $2 \times 60 = 120°$.
13. One sixth is $60°$, so three sixths is $3 \times 60 = 180°$, a half turn.
14. One fifth is $72°$, so two fifths is $2 \times 72 = 144°$.
15. One eighth is $45°$, so three eighths is $3 \times 45 = 135°$.
16. One sixth is $60°$, so five sixths is $5 \times 60 = 300°$.
17. One ninth is $40°$, so four ninths is $4 \times 40 = 160°$.
18. One twelfth is $30°$, so five twelfths is $5 \times 30 = 150°$.
19. One tenth is $36°$, so seven tenths is $7 \times 36 = 252°$.
20. One twelfth is $30°$, so seven twelfths is $7 \times 30 = 210°$.
21. A full spin is $360°$. A $\frac{1}{4}$ turn is $360 \div 4 = 90°$.
22. Each slice is one of 8 equal parts, so it is $\frac{1}{8}$ of the circle. That is $360 \div 8 = 45°$.
23. One twelfth of a circle is $360 \div 12 = 30°$. Moving $\frac{4}{12}$ of the way is $4 \times 30 = 120°$.
24. A half turn is $360 \div 2 = 180°$. A $\frac{3}{4}$ turn is $3 \times 90 = 270°$. The difference is $270 - 180 = 90°$.

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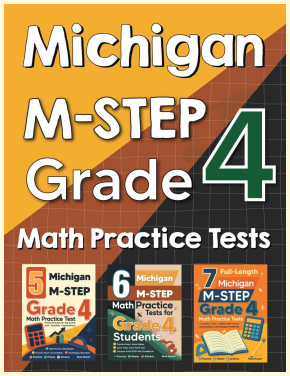

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